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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/518,889

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Anders Jirskog

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EXAMINER

BARKER, MATTHEWM

ART UNIT

PAPER NUMBER

3662

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/518,889

**Applicant(s)**

JIRSKOG, ANDERS

**Examiner**

MATTHEW M. BARKER

**Art Unit**

3662

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3, 5, 7-10 and 12-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 7-10 and 12-16 is/are rejected.
- 7) ☒ Claim(s) 1, 9 and 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/25/2008 has been entered.

### ***Claim Objections***

2. Claim 1 is objected to because of the following informalities: Line 3 of the claim should include the word --for-- between "unit" and "transmitting", as the claim is drawn to an apparatus. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-3, 5, 7-10, and 12-16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

5. Amended independent claims 1 and 9 claim a signal analyzer that decides on which frequencies the radar module will be operated, and generates an appropriate control signal that operates the switch. The claims fail to comply with the enablement requirement because there is not adequate disclosure in the specification to enable one of ordinary skill in the art to make the analyzer to perform such decision making. On page 4, line 35- page 5, line 2 of the specification, it is disclosed that the "most accurate value of the level surface of the product inside the tank" is determined and "Judgments of which echo from the surface of the product in the tank that is the most accurate and which echoes that may be disregarded as disturbance echoes are made available by the present invention", however there is no apparent disclosure as to how it is determined which frequency band produces the most accurate measurement. Based on the teaching, one of ordinary skill in the art may assume that the analyzer compares various echoes to a known baseline; however such an assumption would be contrary to the apparent objective and advantage of the invention, that is, the ability to change the frequency in dependence of varying conditions in the tank during normal operations of the radar level gauge system (see page 3, lines 31-34, describing the shortcomings of the prior art, and page 4, lines 30-33). If the level gauge is to operate without prior knowledge of the conditions in the tank, it is unclear how a baseline could be established and further, if multiple baselines existed for various conditions, how the analyzer would be able to determine which baseline to use.

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6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-3, 5, 7, 8, and 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schultheiss (US 2002/0020216) in view of Blom et al. (6,026,307) or Damgaard et al. (6,150,890).

Regarding claim 1, Schultheiss discloses a radar level gauge and method for measuring the level of a surface of a product by means of a radar level gauge, including a radar module for generating microwave signals on at least two different frequency bands (Figure 1; Abstract), an antenna unit (7/8; see final 3 lines of paragraph 0017) for transmitting and receiving microwave signals, a measuring and controlling unit for determining the level based on time lapsed between signals (3), a microwave generating source for providing a first microwave signal of a first frequency band (inherent, as frequency "f" must be generated), and switches (6) operated by means of a control signal (CLK) for switching the circuit to operate on a first or second frequency band (paragraph 0022). Schultheiss discloses a signal analyzer (3) for analyzing the received signals on the frequencies transmitted by the antenna.

Schultheiss does not disclose that the analyzer decides on which frequencies the radar module will be operated and generates the control signal. It is noted that unlike claim 9, claim 1 does not require that the decision be based on the analysis of received signals. Schultheiss instead shows a control signal (CLK) that dictates which frequency

is used (paragraph 22), but provides no detail on how CLK is generated. It would have been obvious to one of ordinary skill in the art to generate CLK with the analyzer in the interest of limiting the number of required parts.

Schultheiss does not specify how each transmit frequency is generated, and thus does not disclose a frequency multiplier coupled between the microwave generating source and antenna.

However, it is well known in the art to use a frequency multiplier to generate a second frequency from a first, as shown by Blom (Figure 1: 118), and Damgaard (Figure 6: 28). It would have been obvious to utilize a frequency multiplier in the circuit of Schultheiss in order to avoid the need for numerous costly frequency generators.

Regarding claims 2 and 12-14, Schultheiss discloses the first switch, and that the choice of operating frequency is made by a control signal as discussed above. Schultheiss does not explicitly disclose mixers or second switches. However, Schultheiss does disclose that the receiver may consist of a number of receiver modules, one for each frequency. Inherently, a switch must exist to route the received signal to the appropriate circuitry. While Schultheiss does not disclose the details of the receiver modules, it is standard practice in the art to mix a received signal with the transmitted signal provided by a power divider so as to extract information from the resulting IF signal. It would have been obvious, if not inherent to the system of Schultheiss to use mixers in order to achieve conventional advantages in the art with no new or unexpected results.

Regarding claims 3 and 5, neither Blom nor Damgaard disclose frequency multipliers coupled in series; however it is well known in the art that frequency multiplication may be performed over a number of multiplication stages in order to generate the desired frequency. It would have been obvious to one of ordinary skill in the art to use cascaded/ series multipliers, each multiplying the input by a constant to achieve conventional advantages in the art with no new or unexpected results.

Regarding claims 7 and 8, as discussed regarding claim 1, Schultheiss does not specify how the transmit frequencies are generated; however it is common practice in the art to utilize a VCO and PLL in the generation of a microwave signal. It would have been obvious, to use a VCO and PLL in the circuit of Schultheiss in order to achieve conventional advantages in the art such as producing stable frequencies with no new or unexpected results.

Regarding claims 15-16, Schultheiss does not specify that the ratio between the second and first frequencies is greater than 1.5:1. Indeed, Schultheiss is silent with respect to the ratios. However, it would have been obvious to one skilled in the art to set the ratio between the second and first frequencies to greater than 1.5:1, as the reflected wave intensity can vary greatly depending of the frequency and substance being measured (paragraph 0003). Therefore, a wide range of frequencies (greater than 1.5 to 1) is needed to enable the device to accurately measure different substances.

***Allowable Subject Matter***

8. Claims 9 and 10 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 1st paragraph, set forth in this Office action.

***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited art relates to various level or distance measuring devices employing multiple frequencies.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW M. BARKER whose telephone number is (571)272-3103. The examiner can normally be reached on M-F, 8:30 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Tarcza can be reached on (571)272-6979. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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/Matthew M Barker/  
Examiner, Art Unit 3662

/Thomas H. Tarcza/  
Supervisory Patent Examiner, Art Unit 3662